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AUTHOR Jones, Robert F. Adams, Lori N.
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ABSTRACT

This bibliography includes 35 reports of research, dated from 1978 to 1983, on the new Medical College Admission Test (MCAT). These reports consist primarily of studies published in professional journals or presented as papers at professional meetings. No effort was made to screen the studies for methodological adequacy or other measures of quality. The abstracts were written to give readers a sense of the data and to reflect the interpretations and conclusions drawn by the author(s) of the studies. Most of the entries in the bibliography are studies of predictive validity, although other types are represented. Students in allopathic medical schools constitute the typical study population; however, one study examines the validity of using the MCAT for selecting osteopathic medical students, and another, veterinary medical students. The studies are arranged in chronological order by date of publication or presentation. This bibliography will be updated regularly. (PN)

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MCAT

INTERPRETIVE STUDIES SERIES

AN ANNOTATED BIBLIOGRAPHY OF RESEARCH ON THE MEDICAL COLLEGE ADMISSION TEST

November, 1982

Medical College Admission Test
Interpretive Studies Series
Report #82-1

Prepared by:

Robert F. Jones, Ph.D.
Lori N. Adams

Division of Educational Measurement and Research

Preface

This bibliography includes all reports of research on the new Medical College Admission Test that have come to our attention through November, 1982. These reports consist primarily of studies published in professional journals or presented as papers at professional meetings.

No effort was made to screen the studies for methodological adequacy or other measures of quality. The abstracts were written to give readers a sense of the data and to reflect the interpretations and conclusions drawn by the author(s) of the studies. Most of the entries in the bibliography are studies of predictive validity, although other types are represented. Students in allopathic medical schools constitute the typical study population; however, one study examines the validity of using the MCAT for selecting osteopathic medical students and another veterinary medical students. The studies are arranged in chronological order by date of publication or presentation.

This bibliography will be updated regularly. Accordingly, we would appreciate receiving copies of reports of studies which have been overlooked. To facilitate contact with authors, the institution where each study was conducted is identified. Further assistance in securing copies of unpublished studies can be obtained from the Division of Educational Measurement and Research.

1. Givner, N., and Hynes,K. New and Old MCAT: A Preliminary Comparison. Evaluation & The Health Professions. 1:95-100, 1978.

This study examines the relationship between the New and old versions of the Medical College Admission Test (MCAT). The New MCAT scales were developed to measure problem-solving skills in addition to the ability to recall information. Scores on both the old and New MCAT were available for 66 re-applicants to the University of Nebraska College of Medicine. Correlations corrected for restriction of range were computed between the old and New MCAT scales, in order to estimate relationships pertaining to the total group of applicants. Despite instances of moderate commonality, substantial variability on all of the New MCAT scales could not be explained by performance on the Old MCAT scales. The results are seen as providing preliminary support for the claim that the New MCAT is assessing skills not measured by the old MCAT.

2. Pohlman,M., Richardson, M., and Pohlman,J. Use of a Simulated MCAT to Predict Real MCAT Scores. Evaluation & The Health Professions. 2:357-364, 1979.

In this study, a mock Medical College Admission Test (MCAT) was developed by faculty of the Medical Education Preparatory Program associated with the School of Medicine at Southern Illinois University. It was administered to 39 premedical students two weeks prior to the April 1977 MCAT administration. Of these, 27 students also took the real MCAT examination. Correlation coefficients were computed between mock and real MCAT scores and stepwise regression analysis was performed. Correlations between scores on respective scales of each test range from .74 to .85, indicating a high degree of correspondence. The mock MCAT is seen by the authors as a valuable aid in advising students concerning their readiness for medical school. It also is used to provide diagnostic information needed to prescribe remediation available through curriculum offerings.

3. Molidor, J.B., and Elstein, A.S. A Factor Analytic Study of the Old and New MCAT Examinations. Paper presented at the 18th Annual Conference on Research in Medical Education, Washington, D.C., October, 1979.

This paper reports an analysis of the factorial structure of the New MCAT, compares that structure with the factorial structure of the old MCAT, and considers how the new test might best be used as a selection device in medical school admissions. Data were collected on two samples: 1) 2880 students with old MCAT scores applying for admission to the 1977 entering class of the Michigan State University College of Human Medicine, and 2) 2391 students with New MCAT scores applying for admission to the 1978 entering class. Correlation matrices for each group were computed, applied to a principal components analysis, and transformed using a varimax rotation. Analysis of the old MCAT resulted in a two-factor solution: Verbal Ability and Science-Quantitative. Analysis of the new MCAT also produced two factors, Science and Skills Analysis, but the factor structure appeared to be less well defined. The authors suggest that averaging the science scores and the skills scores separately is a practical way for admissions officers to use the scores without diminishing the new test's predictive power.

4. Deighton, B.C., Smith, D.U., and Gallagher, R.E. The Relationship Between Scores on the New Medical College Admission Test and Performance in the First Year of Medical School: A Preliminary Study. Paper presented at the 18th Annual Conference on Research in Medical Education, Washington, D.C., October, 1979.

In this study the validity of the New MCAT for predicting performance of first-year students in an organ systems curriculum is examined. The sample consisted of 248 students entering the Wayne State University School of Medicine in 1978. The content taught by a multi-disciplinary team was organized into seven instructional units: introductory, cardiovascular, gastrointestinal, respiratory/ renal, endocrine, neuroscience, and family medicine. Student performance was based on

multiple-choice type examinations administered at the end of each unit of instruction. Those for the first four units were available for analysis. Results indicate at least a moderate degree of correlation between scores on the New MCAT and the unit examinations. These are highest for Biology, Science Problems, and Chemistry. Lower correlations are observed for MCAT Physics and the two skills analysis subtests. The pattern of correlations with subtests of the unit examinations appear to be reasonable from a content perspective, e.g., significant correlations for MCAT Chemistry with biochemistry and respiratory/renal systems. The authors conclude with a discussion of the limitations to generalizing from their findings.

5. Hynes, K., and Givner, N. An Empirical Investigation of Changes in MCAT Scores Upon Retest. Journal of Medical Education. 55:201-202.

The purpose of this study was to compare performance gains made by two groups of test repeaters: 1) those who scored initially below what would have been predicted from their undergraduate college grades; and 2) those who scored initially above what would have predicted. Ninety-three applicants to the University of Nebraska College of Medicine who had taken the MCAT on two consecutive administrations were studied. As hypothesized, the "below predicted" group improved their performance significantly, but the "above predicted" group did not. The results are somewhat confounded by differences in the initial scores for both groups. This suggests that the improvement for the "below-predicted" group may be largely a function of a statistical artifact known as regression to the mean.

6. Molidor, J.B., Elstein, A.S., and Scheifley, V. The Old and New MCAT Examinations: What Do They Measure? Paper presented at the annual meeting of the American Educational Research Association, Boston, MA, April, 1980.

This study extends a previous one by the authors in using factor analysis to compare the old and New MCAT examinations. In the previous study, two samples were used in separate analyses of the two tests, with the results compared. In the present study data were gathered from a single sample of 338 re-applicants to the Michigan State University College of Human Medicine who took both tests. The results indicated a two-factor solution: Verbal- General Information and Science-Quantitative. The New MCAT loaded predominately on the latter factor. The authors view the New MCAT as de-emphasizing the assessment of verbal abilities and stressing the scientific-quantitative domain. Admissions committees are advised to consider these results in working with the New MCAT. They caution against the inadvertent emphasis given to science-quantitative skills by the simple averaging of the six scores.

7. Cullen, T.J., Dohner, C.S., Peckham, P.D., Samson, W.E., and Schwarz, M.R. The Relationship of Scores on the New Medical College Admission Test to First Quarter Examination Scores. Journal of Medical Education. 55:393-398, 1980.

The predictive validity of the New Medical College Admission Test as it relates to end-of-quarter examinations in anatomy, histology, physiology, biochemistry, and "ages of man" is presented. Subjects were 175 students from the 1978 entering class to the University of Washington School of Medicine. It is recognized that the maximum predictive power is attenuated by the reliability of the criterion variables. To determine the value of attempting to increase the reliability in the criteria, the authors corrected the validity coefficients for attenuation. Regression analyses were also undertaken to examine the extent to which the new MCAT subtests can predict scores on end-of- quarter examinations. Results indicate that MCAT Chemistry, Physics and Science Problems are the most useful in predicting student performance. The range of correlations is from .02 to .42 uncorrected and from .02 to .57 corrected for attenuation. Regression analyses show that MCAT scores alone explain

from 8 to 18 percent of the variance in the criterion measures, while MCAT scores plus undergraduate GPA explain from 10 to 25 percent of the variance. These data are viewed by the authors as encouraging. The utility of the end-of-quarter examinations for presaging future academic difficulty or success emphasizes the practical significance of the results.

8. Friedman, C.P., and Bakewell, W.E. Incremental Validity of the New MCAT. Journal of Medical Education. 55:399-404, 1980.

The authors investigated the power of the New Medical College Admission Test (MCAT) to predict performance of first-year medical students at the University of North Carolina. The approach was to compute the additional variance in performance explainable by the New MCAT after the effects of other routinely available admissions variables were taken into account. This incremental validity of the New MCAT was found to be substantial, with performance prediction improved by 23 to 38 percent, and was higher in this range when nationally standardized performance measures were employed as the outcome variable. Also several predictor variables--including two New MCAT subtests-- were found to have significant polynomial relationships to the outcome measures. Use of polynomials in the regression procedure increased the overall accuracy of the prediction but did not affect the incremental validity of the New MCAT.

9. McGuire, F.L. The New MCAT and Medical Student Performance. Journal of Medical Education. 55:405-408, 1980.

This paper presents an analysis of the New MCAT and its relationship to the criterion of class standing for 90 students entering the University of California, Irvine College of Medicine in 1978. Correlational and regression analyses are employed. The latter is used to derive a new prediction index, that serves as a screening mechanism in the school's admissions procedures. With the exception of SA:Reading, correlations for all

MCAT scales with first year class standing were all found to be statistically significant, ranging from .36 to .61. MCAT Science Problems, Chemistry, and Biology had higher correlations than undergraduate GPA. The prediction index emerging from the regression analysis gave approximately equal weight to undergraduate GPA and MCAT Science Problems. It achieved a cross-validated multiple corelation of .62 in a new sample. Procedures involved in the derivation and use of prediction indices are described.

10. Jones, R., and Beran, R. Test Repeater Performance on the New MCAT. MCAT Interpretive Studies Series #80-1 AAMC: Washington, D.C., 1980.

This study describes the performance changes of 5,717 examinees who sat for the New MCAT twice in 1978. Scores increased on the average approximately one point in the science areas of assessment and three-quarters of a point in each skills analysis area. The performance changes correlated inversely with initial score. Examinees whose scores were ten or higher tended to have lower scores on the repeat testing. These results are discussed in terms of two factors: error in measurement and real changes in the level of achievement through study and review. General guidelines for the interpretation of multiple sets of scores are presented.

11. Friedman, C., and Porter, C. Incremental Validity: the Old and New MCAT's Compared. Paper presented at the 19th Annual Conference on Research in Medical Education, Washington, D.C., October, 1980.

The authors compared the incremental validity of the New and old MCAT. Subjects were medical students currently enrolled at the University of North Carolina, 319 of whom had taken the old MCAT, 159 in the entering class of 1976 and 160 in the entering class of 1977; and 158 in the entering class of 1978 who sat for the New MCAT. The independent variables were, in addition to MCAT scores, each

student's non-science and science GPAs, the selectivity of the undergraduate school, marital status, age, the "quantitativeness" of undergraduate major, parental education and income, hometown community size, average annual change in undergraduate GPA, highest degree earned and total undergraduate science hours. Dependent variables in the study were end of year examination scores for the first and second years of the UNC medical school curriculum. Subtest scores from these comprehensive examinations for parts purchased from the NBME were analyzed separately. A multiple regression procedure was implemented, with the MCAT scores entered into the equation last. Two indices of incremental validity were used. Results suggest that the incremental validity of the New MCAT exceeds that of its older counterpart. On the first index, the new MCAT was clearly superior; on the second, it revealed incremental validity as least as high as the old MCAT. The findings support previous studies which show the New MCAT increasing predictive power by 30% when second-year exam scores are the criterion measures. While the Science test of the old MCAT made the highest contribution to validity, the Biology and Science Problems subtests of the New MCAT appear to be the best predictors of medical school performance. Most of the contribution to predictability by the New MCAT is accountable in these two scores. Limitations to the generalizability of these results are discussed.

12. Cullen, T., Dohner, C., Peckham, P., and Samson, W. Restriction of Range and the Predictive Validity of the New Medical College Admission Test. Paper presented at the 19th Annual Conference on Research in Medical Education, Washington, D.C., October, 1980.

The purpose of this study was to investigate the effect of restriction of range on validity coefficients calculated for the New MCAT. A second purpose was to investigate the relative contribution of each of the six subtest scores in predicting medical school performance. The sample included 170 students from the 1978 entering class at the University of Washington. The dependent variable in each case were scores on the first year

comprehensive examination. The correction for range restriction increased substantially the validity coefficients, from .35 to .50 for Biology, from .45 to .60 for Science Problems, and from .47 to .63 in Chemistry. An uncorrected multiple correlation of .51 was found. The authors conclude that the New MCAT appears to measure well what it is supposed to measure for this sample of students.

13. Cookson, F.B., Neil, S.M., and Gupta, D.M. An Analysis of the Predictive Accuracy of Various Criteria Used for the Selection of Medical Students. Paper presented at the annual meeting of The Association of Canadian Medical Colleges, Winnipeg, Canada, October, 1980.

This study analyzes the predictive value, and potential use, of New MCAT scores at the University of Alberta Faculty of Medicine. The samples consisted of all students entering in the fall of 1977, 1978 and 1979, who wrote the New MCAT. The criterion measure was first year grade point average: a composite of course marks and scores on an end-of-year comprehensive examination. Correlational and regression analysis revealed that the MCAT Biology score was the single best predictor of performance, accounting by itself for 24 to 26 percent of the variance in the criterion measure. Premedical grade point average tended to be the next most important predictor in the regression analysis. MCAT Chemistry and Science Problems also showed moderately strong correlations with first-year performance. MCAT Physics, SA:Reading, and SA:Quantitative had generally lower correlations. The authors conclude that New MCAT scores should reasonably be assigned a weight in the admissions process at the University of Alberta.

14. Essex, D., Sorlie, W.E., and Thompson, D.S. New MCAT Versus Old MCAT: Predictive Validity. Journal of Medical Education. 55:967, 1980.

The objective of this study was to examine the predictive validity of the New MCAT and compare the correlation coefficients computed with those obtained from the old MCAT. Data

were collected from seven first year basic science classes at the University of Illinois from 1973 to 1979. Dependent measures included total scores from a locally developed certifying examination and total scores from the NBME Part-I examination. The highest zero-order correlations for the old MCAT were obtained for the Science subset. These ranged from .29 to .58. The highest zero-order correlations for the New MCAT were obtained for the Chemistry subtest, with a range of .45 to .52. Validity coefficients for undergraduate GPA were lower than those for the best MCAT score but higher than the other MCAT scores. The authors conclude that no increase in predictive validity is present in the New MCAT versus the old, but the stability of the scores may be better.

15. Givner, N., Klintberg, I., and Hynes, K. Effect of Retaking the Medical College Admission Test on Applicants' Scores. Psychological Reports, 47:411-415, 1980.

This study was designed to determine whether retaking the Medical College Admission Test (MCAT) results in significant improvement in scores. A sample of 93 applicants to the University of Nebraska College of Medicine, taking the test on two consecutive administrations, was studied. Their performance was compared to that of 439 applicants taking the test only once. Multivariate analysis of variance indicated that the retake group initially scored significantly lower than the non-retake group on all six scales. Applicants retaking the test significantly improved their scores in all areas except SA:Reading. The magnitude of the improvement tended not to be very large. Furthermore, scores of the retake group on their second test administration were still significantly lower than those who did not retake the test. Possible effects of these changes on admissions decisions are discussed.

16. Hart, M., Payne, D., and Lewis, L. Prediction of Basic Science Learning Outcomes with Cognitive Style and Traditional Admissions Criteria. Journal of Medical Education. 56:137-139, 1981.

The purpose of this study was to investigate whether cognitive style can be a useful adjunct to traditional admissions measures in predicting levels of learning in two preclinical science courses. Data were gathered from the 1978 freshman class at the Medical College of Georgia. Independent variables included the Group Embedded Figures Test (GEFT), a measure of cognitive style, New MCAT scores, and undergraduate science GPA. Dependent variables were scores on biochemistry and physiology examinations, broken down to represent various categories of learning: memory, translation, interpretation and application. Science GPA proved to be the best predictor of memory learning in the two areas, with simple correlations of .40 and .39. Science GPA was also the best predictor of higher levels of learning in biochemistry with a correlation of .43. However, MCAT chemistry and SA:Quantitative were the best predictors of higher levels of learning in physiology, with correlations ranging from .45 to .50. Contrary to the hypothesis, cognitive style did not emerge as a useful predictor of performance, either alone or in conjunction with the other measures. This finding may have resulted from low variability on the measure in the sample studied or other aspects of the testing and instructional procedures. The study shows the need for this detailed type of investigation in pinpointing specific areas of academic weakness and possible remedies.

17. Jones,R., and Thomae-Forgues, M. A Factor Comparison of Old and New MCAT Scales. Journal of Medical Education. 56:161-166, 1981 (also MCAT Interpretive Studies Series #81-1.)

The old Medical College Admission Test (MCAT) and the New MCAT were compared by factor-analyzing the scores of a sample of 1,484 examinees who had taken both test batteries during 1976-77. Three common factors were extracted and interpreted. The

first, a general science-quantitative factor, linked scales from both test batteries. A second factor, labeled verbal ability, characterized primarily two scales from the old test, Verbal Ability and General Information. A third factor, interpretation skills, was common to the two skills analysis scales of the new test. Specific variance for each subtest was also estimated by comparing the variance accounted for by these factors with the systematic variance indicated by the reliability. It appears that the old Quantitative Ability subtest measured unique skills which have not been incorporated into the new battery. Also the new Biology and Physics scores seem to provide specific information on knowledge in a particular discipline in addition to general science knowledge. Discussion centers on the implications of these data for the use of New MCAT scores in admissions.

18. Hynes, K., and Givner, N. Restriction of Range Effects on the New MCAT's Predictive Validity. Journal of Medical Education. 56:352-353, 1981.

This study examines the effects of restriction of range on validity coefficients obtained for the New MCAT. Restriction of range is described as a statistical phenomenon that renders validity coefficients computed on samples of applicants accepted to medical school to be significant underestimates of the selection test's true validity. The sample consisted of 142 students admitted to the University of Nebraska College of Medicine in 1978. The criterion measure was the NBME-Part I total score. Correlation coefficients were computed and "corrected" for restriction of range using a standard formula. The observed validity coefficients for the six MCAT scores ranged from .28 to .46, while the correlations "corrected" for the Nebraska applicant pool ranged from .32 to .54. Those "corrected" for the national applicant pool ranged from .34 to .57. The authors conclude that the New MCAT appears even a more promising predictor of performance than previous studies have indicated.

19. Holly, C.D. Background Variables as Predictors of Academic Performance. Paper presented at the First Annual Educational Conference of the American Association of Colleges of Osteopathic Medicine, Kansas City, Missouri, June, 1981.

This paper discusses methodological issues that underlie studies of the prediction of academic performance in medical shool and reports on one such study conducted with students from the Texas College of Osteopathic Medicine. This particular study sought to identify salient background variables that would differentiate between "good" and "poor" performing students and to suggest changes in admissions criteria, where applicable. Predictor variables included, in addition to MCAT scores and undergraduate GPA, sex, ethnicity, marital status, military experience, continuous education, financial assistance, and biology major. Criterion variables included first semester grade average and grades in specific courses. Univariate and multivariate analyses were performed. The analyses found that good vs. poor students could not be meaningfully differentiated on the basis of any of the nominal background variables (e.g., sex, major, etc.). First semester performance could be predicted reasonably well using undergraduate science GPA and selected MCAT subtests. A multiple regression equation giving equal weight to science GPA and MCAT Science Problems explained 25 percent of the variance in first semester average. This was considered to be sufficient predictability for use in admissions decisions. With local supplemental testing, there was considered to be sufficient predictability for channeling students into learning strategy training programs.

20. Brooks, C.M., Jackson, J., Hoffman, H., and Hand, G. Validity of the New MCAT for Predicting GPA and NBME Part I Examination Performance. Journal of Medical Education. 56:767-768, 1981.

The validity of the New MCAT for predicting first and second year cumulative GPA, and NBME Part I, subtest scores and total, was

studied. The sample consisted of 156 students from the 1978 entering class at the University of Alabama Medical School, all those who had successfully completed their first two years. Results show that the best predictor of all measures with two exceptions was MCAT Chemistry. SA:Reading was the best predictor of NBME Behavioral Science and Science Problems of NBME Pharmacology. Validity coefficients for the best predictors ranged from .36 to .57. These coefficients are seen as being in the range of values found for useful predictive instruments.

21. Veloski, J., Hojat, M., and Zeleznik, C. The Overall Validity of the New MCAT. Paper presented at the 20th Annual Conference on Research in Medical Education, Washington, D.C., October, 1981.

This study used canonical correlation analysis to examine the overall relationship between the New MCAT and selected measures of academic performance in medical school. The sample included 223 students who entered Jefferson Medical College in 1978. One set of multiple measurement variables consisted of the six scales of the New MCAT. Grades in freshman and sophomore courses and scores on NBME Part I were considered as the two other sets of variables. The first analysis produced a canonical correlation coefficient of .49 between the MCAT set and the course grade set. Chemistry and Science Problems received the highest loadings in the MCAT set. The second analysis, between MCAT and NBME scores differed from the first in that it produced two canonical factors. The first was a basic science factor similar to that found in the first analysis. High loadings were observed for Chemistry and Science Problems and the canonical correlation coefficient was .61. A second factor was uncovered linking the MCAT Reading subtest and the NBME Behavioral Science scale. The canonical correlation coefficient for this factor was .38. Several variations of these analyses were performed and are described. The findings are seen as supporting the overall predictive and construct validity of the New MCAT.

22. Hull, A., Calhoun, J., and Maxim, B. Predicting Medical School Performance Using the Old and New MCAT. Paper presented at the 20th Annual Conference on Research in Medical Education, Washington, D.C., October, 1981.

The purpose of this study was to determine the predictive validity of new MCAT scores in relation to basic science and clinical performance and to compare results with those for the old MCAT. Basic science performance was measured by NBME-Part I scores; clinical performance was assessed using a 15- item rating form from a required third-year clerkship in internal medicine. Students entering the University of Michigan Medical School in the fall of 1977 and the fall of 1978 comprised the samples. Both old and New MCAT scores were found to be substantially correlated with NBME-Part I scores, with multiple correlations of .65 and .60, respectively. None of the old MCAT scales showed statistically significant correlations with any clinical performance measure. Among the New MCAT scales, only Biology revealed a statistically significant correlation. The authors conclude that these results support other findings that test scores and premedical grades are excellent predictors of basic science performance but are less effective with clinical performance measures.

23. Beaton, J., Brooks, C.M., Maisiak, R., Willcutt, H., and Linton, P. Using the New MCAT and NBME Subject Examinations to Predict Performance in a Medical School Behavioral Sciences Course. Paper presented at the 20th Annual Conference on Research in Medical Education, Washington, D.C., October, 1981.

In this study data from the New MCAT undergraduate GPA and an NBME subject examination in behavioral science (used as a pretest) were used to predict grades in a behavioral science course at the University of Alabama Birmingham School of Medicine. The sample consisted of 165 freshmen medical students from the 1980 entering class. The best independent predictor of performance was undergraduate GPA in non-science courses (r=.50), followed by the NBME pretest (r=.45). The best predictor among MCAT scores was

SA:Reading (r=.32). Differences between the NBME pretest scores and another NBME exam used as a post-test and included as part of the final grade were used as one facet in documenting course effectiveness.

24. Golmon, M.E., and Berry, C. Comparative Predictive Validity of the New MCAT Using Different Admissions Criteria. Journal of Medical Education. 56:981-986, 1981.

The purpose of this study was to compare the predictive validity of the New MCAT for two groups of students entering Northwestern University Medical School in 1978. One group of 65 students (HPME) had been selected for medical school on the basis of credentials earned while in high school. They began medical studies two years later along with a second group of 94 students (RPME) selected on the basis of traditional criteria. In stepwise multiple regression equations, New MCAT scores increased significantly the proportion of variance explained for both groups and with respect to each criterion, first and second year grade-point average and NBME- Part I scores. Validity coefficients were consistently greater for the HPME group. A multiple correlation as high as .76 was achieved in predicting first year grade-point average for the HPME group using undergraduate grades and MCAT scores. The differences found between groups are seen as supporting the thesis that typical studies underestimate the validity of selection measures because of the restricted range of enrolled students' scores. The authors conclude that the New MCAT possesses substantial predictive validity, which is evident by studying a group of students selected without making use of these scores.

25. McGuire, F.L. The New MCAT and its Relationship to Medical Student Performance--Year Two. Journal of Medical Education, 57:60-61, 1982.

Data for 92 students from a medical school class entering the University of California-Irvine College of Medicine in 1979 were used in a replication of a previous study

on the predictive validity of the New MCAT. A screening index derived from the previous study was also cross-validated. The index was found to be correlated with class rank at the end of the first year on the order of .50. As was found in the previous study, the New MCAT demonstrated a much higher relationship to medical school performance than the old MCAT.

26. Jones, R. and Thomae-Forgues, M. From MCAT to M.D.: Predicting Success in Medical School. Paper presented at the annual meeting of the American Educational Research Association, New York, NY, March, 1982.

This paper describes the rationale behind the development of the New MCAT and reports on preliminary findings of the test's predictive validity. The findings are based on a summary of results of studies performed during the first several years of the new test's use for as many as 25 classes at 15 different medical shools. The criterion measures considered in these studies are limited to medical school course grades in the first two years and scores on Part I of the National Boards. The studies show that both MCAT scores and undergraduate grades are significantly correlated with performance in the first two years in medical school. Their relative predictive value depends upon the criterion being considered. A major finding was the tendency for MCAT scores to improve substantially the predictive power provided by undergraduate GPA alone. The average incremental validity for the MCAT expressed as a percentage increase in the proportion of variance explained was 65 percent with first year course grades as the criterion and nearly 300 percent with NBME scores as the criterion. Chemistry, Science Problems, and Biology are the MCAT scales most highly correlated with basic science performance. The pattern of these MCAT science correlations tends to vary across subject areas of the curriculum, in a way which reflects content similarities. SA:Reading and SA:Quantitative emerge as good predictors of performance in behavioral science. Further directions for MCAT research are outlined.

27. Cawunder, P., and Tasker,J.B. Use of the New Medical College Admission Test in Veterinary School Admissions. Journal of Veterinary Medical Education, 9:1-3, 1982.

The purpose of this study was to evaluate the experience of using the new MCAT for classes entering the Louisiana State University School of Veterinary Medicine in 1978, 1979 and 1980. Only a few veterinary schools use the New MCAT and no studies of its use in that context had been reported. Two specific questions are addressed: 1) do the New MCAT scores provide incremental predictive validity when used in conjunction with the academic performance measures that are usually available; and 2) are New MCAT scores biased for particular groups in the sense that differences found on the test are not reflected in performance differences in the veterinary school program. Performance data were available from the first year for 107 students and the first two years for 51 students. Stepwise multiple regression analysis was used. The MCAT emerged in all analyses as having significant incremental value in predicting performance. A linear combination of the individual MCAT scores explained more variance than a total score. The Chemistry subtest score was found to be the most useful in prediction. Whether or not students had completed undergraduate coursework in chemistry prior to taking the MCAT was a significant moderating variable. MCAT score differences between these two groups were found which were not reflected in performance differences. The authors recommend the MCAT for consideration by veterinary schools seeking ways of improving the objective evaluation of applicants. They suggest particular attention be given to the Chemistry score, as long as the student has completed the required coursework.

28. Carline,J., Cullen, T. and Scott, C. Prediction of Clerkship Performance Using the New MCAT Examination: An Attempted Replication of Canonical Redundancy Analysis. Paper presented at the 21st Annual Conference on Research in Medical Education, Washington, D.C., November, 1982.

This study was an attempt to replicate a previous study using canonical redundancy analysis to predict measures of clinical performance. The previous study with medical students at the Southern Illinois University School of Medicine included scores on the old MCAT with other preadmission measures. The current investigation was carried out with 117 medical students from the University of Washington, and employed New MCAT scores among the predictors. Zero-order correlations and multiple regression analyses indicated that relationships between pre-selection and clinical performance characteristics were small. This was true for both MCAT scores and undergraduate science GPA. Negative relationships were found for non-science GPA. The lack of a significant canonical correlation prevented the application of redundancy analysis. The authors argue that, while the New MCAT did not improve the ability to predict clinical performance, inherent characteristics of the clinical measures used severely limited the study outcomes.